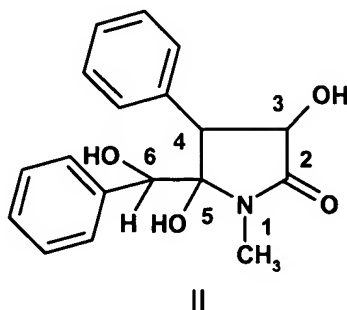


CLAIMS

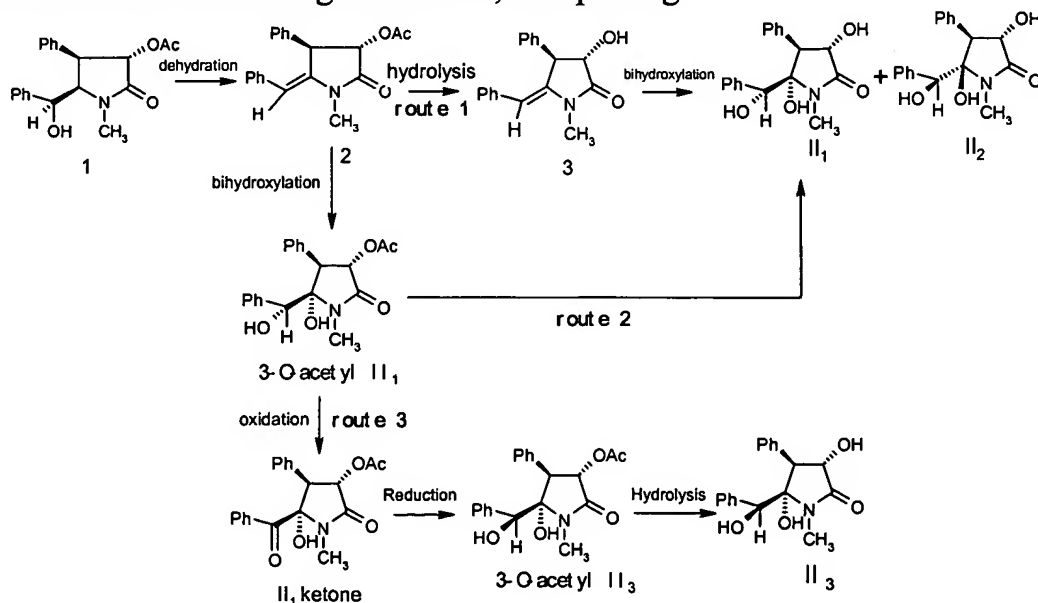
1. An optical active C₅-hydroxyl derivative of clausenamide represented by general formula II,



which is:

racemic II₁, configuration (3S*,4S*,5S*,6R*), or
 racemic II₂, configuration (3S*,4S*,5R*,6S*), or
 racemic II₃, configuration (3S*,4S*,5S*,6S*), or
 optical active II₁, configuration (3S,4S,5S,6R) or (3R,4R,5R,6S), or
 optical active II₂, configuration (3S,4S,5R,6S) or (3R,4R,5S,6R), or
 optical active II₃, configuration (3R,4R,5R,6R) or (3S,4S,5S,6S).

2. A preparation method of the optical active C₅-hydroxyl derivative of clausenamide according to claim 1, comprising:



(a) dehydration of (rac)-3-O-acetyl-clausenamide (1) or an optical isomer thereof, the dehydrating agent may be POCl_3/Py ; or to prepare the methylsulfonate of clausenamide, then cleave the methylsulfonate group with DBU;

(b) hydrolysis of (rac)-3-O-acetyl- $\Delta^{5,6}$ -clausenamide (2) or an optical isomer thereof, which can be carried out under conventional acid or base conditions;

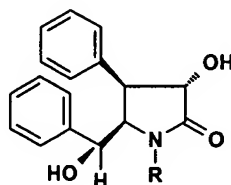
(c) bihydroxylation of (rac)- $\Delta^{5,6}$ -clausenamide (3) or an optical isomer thereof, which can be achieved using OsO_4/NMO , $\text{KHSO}_5/\text{CH}_3\text{COCF}_3$, $\text{WO}_3/\text{H}_2\text{O}_2$;

(d) oxidation of (3S*, 4S*, 5S*, 6R*)-3-O-acetyl-5-hydroxy clausenamide (3-O-acetyl II₁) or an optical active isomer thereof, which may be carried out with oxidants such as $\text{KMnO}_4/\text{CuSO}_4$, MnO_2 , $\text{DMSO}/\text{ClCOCOCI}/\text{TEA}$, $\text{DMSO}/\text{TFAA}/\text{TEA}$, etc;

(e) deduction of (3S*, 4S*, 5S*)-3-O-acetyl-5-hydroxy-clausenamidone (II₁ ketone) or an optical active isomer thereof, which can be carried out using various borohydrides, such as sodium borohydride or lithium tri-sec-butyl borohydride;

(f) hydrolysis of (3S*, 4S*, 5S*, 6S*)-3-O-acetyl-5-hydroxy-clausenamide (II₃) or an optical active isomer thereof, which may be carried out using various acids or bases, or $\text{Sm}/\text{I}_2/\text{CH}_3\text{OH}$.

3. A N-substituted clausenamide derivative represented by general formula (III),



III

characterized that:

relative configuration (3S*,4R*,5R*,6S*),

R is selected from CH_2COR^1 , $\text{CH}_2\text{OCH}_2\text{COR}^2$, and CH_2R^3 ,

R^1 is selected from OH, NH_2 , C_{1-8} alkoxy, $\text{NH}-\text{C}_6\text{H}_4$, and $\text{NH}-\text{C}_6\text{H}_5$;

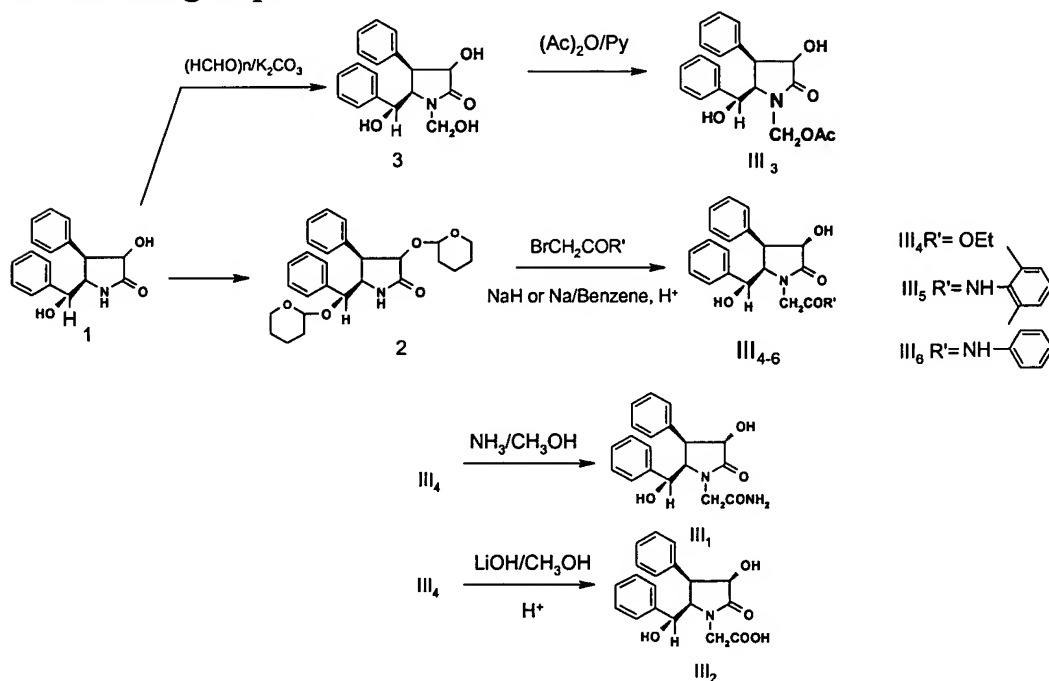
R^2 is selected from C_{1-8} alkoxy, and

R^3 is selected from C_6H_5 , $\text{C}_6\text{H}_4\text{OMe}$.

4. A preparation method of the N-substituted clausenamide derivative according to claim 3, characterized that:

in case R is selected from CH_2R^3 , which is affordable via the the reduction of N-benzyl- or N-p-methoxybenzyl-clausenamidone;

in case R is selected from CH_2COR^1 or $\text{CH}_2\text{OCH}_2\text{COR}^2$, comprising the following steps:



(a) reacting norclausenamide (1) with dihydropyran under the catalysis of pyridinium *p*-toluenesulfonate to give 3,6-di-O-tetrahydropyran-norclausenamide;

(b) dissolving 3,6-Di-O-tetrahydropyran-norclausenamide (2) in anhydrous benzene, adding sodium hydride, heating and adding bromoacetate, then de-protecting the protection group of tetrahydropyran to give N-(alkoxy/

alkylaminocarbonylmethylene)norclausenamides;

(c) treating N-(ethoxycarbonylmethylene)norclausenamide with a largely excess amount of $\text{NH}_3/\text{CH}_3\text{OH}$ solution to obtain N-(aminocarbonylmethylene)norclausenamide;

(d) reacting norclausenamide with paraformaldehyde and potassium carbonate to give N-(hydroxymethyl)norclausenamide;

(e) reacting N-(hydroxymethyl)norclausenamide with corresponding acid anhydride to prepare the corresponding N-(acyloxymethylene)-norclausenamide.

5. A pharmaceutical composition comprising a pharmacological effective amount of any compound according to claim 1 or 3 and a pharmaceutically acceptable carrier or excipient.

6. Use of a compound according to claim 1 or 3 for the preparation of medicaments as nootropic and anti-aging drugs.